

FEDERAL AVIATION AGENCY

Washington 25, D. C.

TECHNICAL STANDARD ORDER

Regulations of the Administrator

Part 514

SUBJECT: AIRBORNE RADAR ALTIMETER EQUIPMENT
(FOR AIR CARRIER AIRCRAFT)

TSO-67

Technical Standard Orders for Aircraft Materials,
Parts, Processes, and Appliances

Part 514 contains minimum performance standards and specifications of materials, parts, processes, and appliances used in aircraft and implements the provisions of sections 3.18, 4a.31, 4b.18, 6.18 and 7.18 of the Civil Air Regulations. The regulation uses the Technical Standard Order system which, in brief, provides for FAA industry cooperation in the development of performance standards and specifications which are adopted by the Administrator as Technical Standard Orders, and a form of self-regulation by industry in demonstrating compliance with these orders.

Part 514 consists of two Subparts. Subpart A contains the general requirements applicable to all Technical Standard Orders. These provisions are summarized below for the convenient reference of the public. Subpart B contains the technical standards and specifications to which a particular product must conform, and each Technical Standard Order is set forth in the appropriate section of Subpart B. The subject Technical Standard Order is printed below. ANY TECHNICAL STANDARD ORDER MAY BE OBTAINED BY SENDING A REQUEST TO FM, WASHINGTON 25, D. C.

SUBPART A-GENERAL

This subpart provides, in part, that a manufacturer of aircraft material, part, process, or appliance for which standards are established in Subpart B, prior to its distribution for use on a civil aircraft of the United States, shall furnish a written statement of conformance certifying that the material, part, process, or appliance meets the applicable performance standards established in this part. The statement of conformance must be signed by a person duly authorized by the manufacturer, and furnished to the Chief, Engineering and Manufacturing Division, Bureau of Flight Standards, Federal Aviation Agency, Washington 25, D. C.

Subpart A also requires appropriate marking of materials, parts, processes, and appliances as follows:

- (a) Name and address of the manufacturer responsible for compliance,
- (b) Equipment name, or type or model designation,
- (c) Weight to the nearest pound and fraction thereof,
- (d) Serial number and/or date of manufacture, and
- (e) Applicable Technical Standard Order (TSO) number.

In addition, Subpart A provides that no deviation will be granted from the performance standards established in Subpart B, and that the Administrator may take appropriate action in the event of noncompliance with Part 514.

SUBPART B

§ 514.73 Airborne radar altimeter equipment (for air carrier aircraft) - TSO C67-(a) Applicability--(1) Minimum performance standards. Minimum performance standards are hereby established for airborne radar altimeter equipment which is to be used on civil aircraft of the United States engaged in air carrier operations. New models of airborne radar altimeter equipment manufactured for use on civil air carrier aircraft on or after November 15, 1960, shall meet the minimum performance standards as set forth in Radio Technical Commission for Aeronautics' Paper entitled "Minimum Performance Standards for Airborne Radar Altimeter Equipment Intended for Determining Pressure Gradients and Operating Within the Radio Frequency Band of 420-460 Megacycles," (Paper 73-60/DO-103) dated April 12, 1960. Radio Technical Commission for Aeronautics' Paper 100-54/DO-60 which is incorporated by reference in and thus is a part of Paper 73-60/DO-103 has been amended by Paper 256-58/EC-386. This amendment is also a part of the minimum performance standards. Exceptions, additions, and substitutions to these standards are covered in subparagraph (2) of this paragraph.

(2) Exceptions. (1) Radio Technical Commission for Aeronautics Paper 100-54/DO-60, and Amendment Paper 256-58/EC-386 dated November 13, 1958, outline environmental test procedures for equipment designed to operate under three environmental test conditions as specified therein under Procedures A, B, and C. Only airborne radar altimeter equipment which meets the operating requirements as outlined under Procedure A or Procedure B of Paper 100-54/DO-60, as amended, is eligible under this section.

1/Copies of these papers may be obtained from the RTCA Secretariat, Room 1072, T-3 Building, 16th and Constitution Avenue, N. W., Washington 25, D. C. Paper 73-60/DO-103, 40 cents per copy; Paper 100-54/DO-60 with Amendment Paper 256-58/EC-386, 20 cents per copy.
2/When airborne radar altimeter equipment is installed on civil aircraft, the installation must comply with the functional and installation requirements of Parts 3, 4b, 6 or 7 of the Civil Air Regulations as applicable.

(ii) The vibration values ~~specified below may~~ be used for equipment designed exclusively for ~~installation on the instrument panel of aircraft~~ In ~~lieu~~ of those ~~specified~~ in Paper 100954/DO-60 • # amended. ~~No shock mounting shall be used during the conduct of this test if the vibration values specified below are used.~~

Amplitude:	0.01" (0.02" total • excursion).
Frequency:	Variable 10-55 c.p.m..
Maximum Acceleration:	1.5 g

(iii) ~~Equipment which is~~ designed exclusively for ~~installation on the instrument panel of aircraft~~ need not be ~~subjected~~ to the ~~shock requirements~~ outlined in Paper 100954/DO-60 as amended.

(iv) Indicating Instruments which are • part of the ~~system~~, but which are not designed exclusively for ~~installation on the instrument panel of aircraft~~, may ~~also~~ be ~~tested~~ to the vibration ~~requirements specified in subdivision (ii) of this subparagraph~~, and need not be • ~~subjected~~ to the ~~shock requirements~~ outlined In Paper 100954/DO-60 as amended.

(b) Marking. (1) In addition to the ~~markings~~ ~~specified~~ in Subpart A, equipment which has been ~~designed~~ to operate over the environmental ~~conditions~~ outlined in Procedure A of RTCA Paper 100954/DO-60, as mended, shall be marked as Category A equipment. ~~Equipment which has been designed to operate over the environmental conditions outlined in Procedure B of this same paper shall be marked as Category B equipment.~~ Equipment which has been designed ~~exclusively~~ for ~~installation on the instrument panel of aircraft~~ and which ~~meets~~ only the amended vibration ~~requirements~~ outlined above shall be identified with the letters I.P. following the category of equipment, such as CAT. A - I.P..

(2) Each major component of ~~airborne~~ radar altimeter equipment (antenna, power supply, etc.) shall be identified with at ~~least~~ the ~~manufacturer's~~ name and TSO number.

(c) Data requirements. (1) The manufacturer shall ~~maintain~~ a current file of complete ~~design~~ data.

(2) The manufacturer shall ~~maintain~~ a current file of ~~complete~~ data describing the ~~inspection and test procedures~~ applicable to his product. (See paragraph (d) of this section.)

(3) Six copies each, except where noted, of the ~~following~~, shall be furnished to the Chief, ~~Engineering and Manufacturing Division~~, Bureau of Flight Standards, Federal Aviation Agency, Washington 25, D. C.

(4) ~~Manufacturer's~~ operating ~~instructions~~ and equipment ~~limitations~~.

(ii) Installation ~~procedures~~ with applicable ~~schematic drawings,~~ wiring diagrams, and ~~specifications~~. Indicate any limitations, restrictions, or other conditions pertinent to installation.

(iii) One copy of the ~~manufacturer's~~ test report.

(d) Quality control. Airborne radar altimeter equipment shall be produced under a quality control system, established by the manufacturer which will assure that each equipment is in conformity with the requirements of this • section and is in • condition for • safe operation. This system shall be described in the data required under paragraph (c)(2) of this Section. A representative of the Administrator shall be permitted to make such inspections and tests at the manufacturer's facility as may be necessary to determine compliance with the requirements of this section.

(e) Previously approved equipment. Airborne radar altimeter equipment approved by the Administrator prior to November 15, 1960, may continue to be manufactured under the provisions of its original approval .

(f) Effective date. November 15, 1960.

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